

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
 Organization  
 International Bureau



(43) International Publication Date  
 18 March 2004 (18.03.2004)

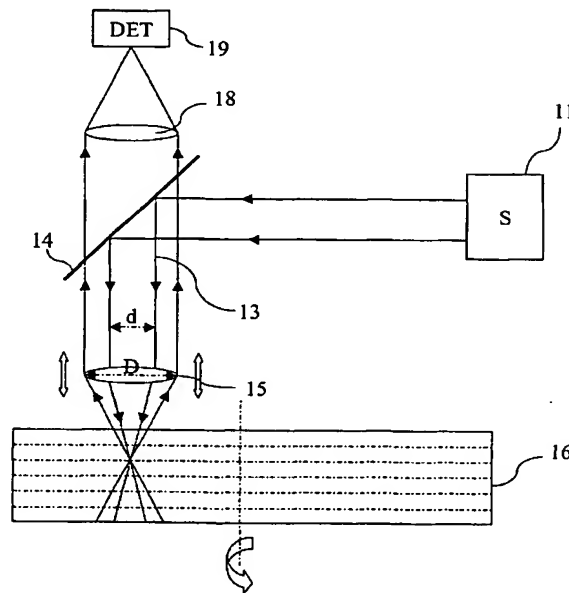
PCT

(10) International Publication Number  
 WO 2004/023459 A3

- (51) International Patent Classification<sup>7</sup>: G11B 7/125, 7/135
- (21) International Application Number: PCT/IB2003/003757
- (22) International Filing Date: 22 August 2003 (22.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 02292176.1 4 September 2002 (04.09.2002) EP
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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
 — with international search report
- (88) Date of publication of the international search report: 21 May 2004

[Continued on next page]

(54) Title: SCANNING APPARATUS FOR FLUORESCENT MULTI-LAYER STORAGE.



(57) Abstract: The invention relates to a scanning apparatus for scanning information in an information carrier (16) comprising a plurality of layers for storing data on a material capable of generating an excited radiation when interacting with an exciting beam (13) produced by an exciting source (11). The scanning apparatus comprises an objective lens (15) for projecting the exciting beam in a layer of the carrier and collecting the excited radiation. The scanning apparatus also comprises a detector unit (19) for detecting the excited radiation collected on the objective lens. According to the invention, the exciting beam has a numerical aperture lower than the lens numerical aperture.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IB 03/03757

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G11B7/125 G11B7/135

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                         | Relevant to claim No. |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y          | US 6 009 065 A (GLUSHKO BORIS A ET AL)<br>28 December 1999 (1999-12-28)<br>cited in the application<br>the whole document                                                                                                  | 1-3                   |
| A          |                                                                                                                                                                                                                            | 4-6                   |
| Y          | "REDUCTION OF OPTICAL DISK NOISE BY<br>COLLECTION OF SCATTERED LIGHT"<br>RESEARCH DISCLOSURE, KENNETH MASON<br>PUBLICATIONS, HAMPSHIRE, GB,<br>no. 321, 1991, page 49 XP000163476<br>ISSN: 0374-4353<br>the whole document | 1-3                   |
| A          | US 5 986 993 A (RIM KYUNG-HWA ET AL)<br>16 November 1999 (1999-11-16)<br>claim 1; figure 5                                                                                                                                 | 4,6                   |

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

26 February 2004

Date of mailing of the international search report

04/03/2004

Name and mailing address of the ISA

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/03757

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s)                                                                                                             | Publication<br>date                                                                                          |
|-------------------------------------------|---|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| US 6009065                                | A | 28-12-1999          | AU 5516598 A<br>EP 0943141 A1<br>JP 2001505701 T<br>WO 9825262 A1                                                                      | 29-06-1998<br>22-09-1999<br>24-04-2001<br>11-06-1998                                                         |
| US 5986993                                | A | 16-11-1999          | KR 200873 B1<br>DE 19700673 A1<br>FR 2743660 A1<br>GB 2309119 A ,B<br>IT MI970015 A1<br>JP 9198700 A<br>NL 1004964 C2<br>NL 1004964 A1 | 15-06-1999<br>24-07-1997<br>18-07-1997<br>16-07-1997<br>08-07-1998<br>31-07-1997<br>05-02-1998<br>14-07-1997 |